

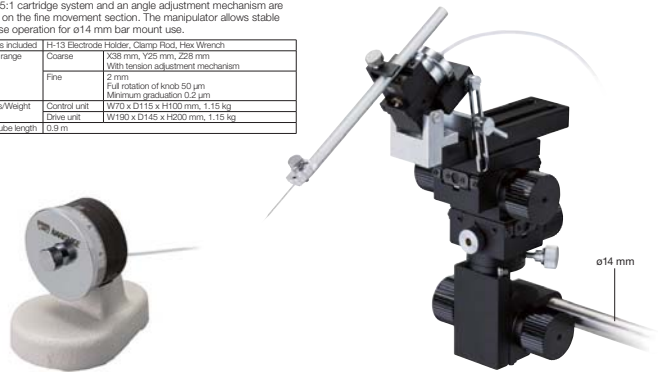
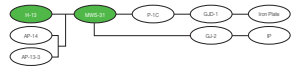
MWS-31 AW 5:1

Micromanipulator (One-axis Water Hydraulic, Bar-mount)

Ideal for experiments under low magnification

The MWS-31 one-axis water hydraulic micromanipulator is combined with a three-dimensional manual coarse manipulator for patch clamping applications under low magnifications, using a stereo microscope. The rotation mechanism makes it easier to exchange pipettes. A water hydraulic 5:1 cartridge system and an angle adjustment mechanism are equipped on the fine movement section. The manipulator allows stable and precise operation for $\phi 14$ mm bar mount use.

Accessories included	H-13 Electrode Holder, Clamping Rod, Hex Wrench
Movement range	Coarse X38 mm, Y25 mm, Z28 mm With tension adjustment mechanism
	Fine 2 mm Full rotation of knob 50 μ m Minimum graduation 0.2 μ m
Dimensions/Weight	Control unit W70 x D115 x H100 mm, 1.15 kg
	Drive unit W190 x D145 x H200 mm, 1.15 kg
Hydraulic tube length	0.9 m



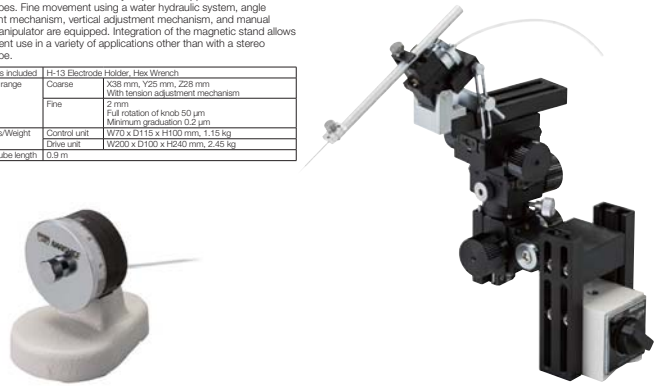
MWS-32 AW 5:1

Micromanipulator (One-axis Water Hydraulic, Magnet-mount)

Ideal for experiments under low magnification, with magnet mounted

Direct attachment of the MWS-32 micromanipulator with the magnetic stand provides the enhanced stability required for applications with stereo microscopes. Fine movement using a water hydraulic system, angle adjustment mechanism, vertical adjustment mechanism, and manual coarse manipulator are equipped. Integration of the magnetic stand allows independent use in a variety of applications other than with a stereo microscope.

Accessories included	H-13 Electrode Holder, Hex Wrench
Movement range	Coarse X38 mm, Y25 mm, Z28 mm With tension adjustment mechanism
	Fine 2 mm Full rotation of knob 50 μ m Minimum graduation 0.2 μ m
Dimensions/Weight	Control unit W70 x D115 x H100 mm, 1.15 kg
	Drive unit W200 x D100 x H240 mm, 2.45 kg
Hydraulic tube length	0.9 m



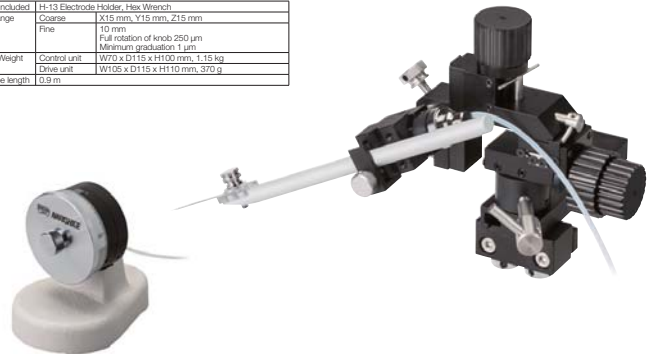
MWS-1A AW 1:1

Micromanipulator (One-axis Water Hydraulic System)

Ideal for patch clamping/blind patching using a stereo microscope

Designed for patch clamping and blind patching with a stereo microscope at low magnification. The MWS-1A coarse micromanipulator uses a one-axis water hydraulic mechanism. With a 1:1 cartridge system, it can travel a 10 mm long distance suitable for a variety of applications.

Accessories included	H-13 Electrode Holder, Hex Wrench
Movement range	Coarse X15 mm, Y15 mm, Z15 mm
	Fine 10 mm Full rotation of knob 250 μ m Minimum graduation 1 μ m
Dimensions/Weight	Control unit W70 x D115 x H100 mm, 1.15 kg
	Drive unit W105 x D115 x H110 mm, 370 g
Hydraulic tube length	0.9 m



MWS-1B AW 5:1

Micromanipulator (One-axis Water Hydraulic System)

Ideal for patch clamping/blind patching using a stereo microscope

Designed for patch clamping and blind patching with a stereo microscope at low magnification, the MWS-1B coarse micromanipulator uses one-axis water hydraulic mechanism. With a 5:1 cartridge system, it offers precise movement to allow you to accurately determine the target location and good stability with minimal drift.

Accessories included	H-13 Electrode Holder, Hex Wrench
Movement range	Coarse X15 mm, Y15 mm, Z15 mm
	Fine 2 mm Full rotation of knob 50 μ m Minimum graduation 0.2 μ m
Dimensions/Weight	Control unit W70 x D115 x H100 mm, 1.15 kg
	Drive unit W105 x D115 x H110 mm, 400 g
Hydraulic tube length	0.9 m



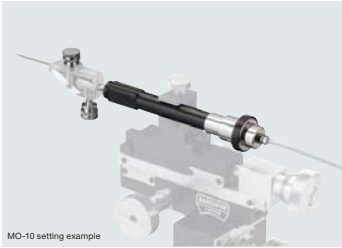
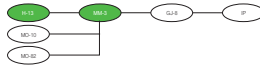
MM-3

Micromanipulator

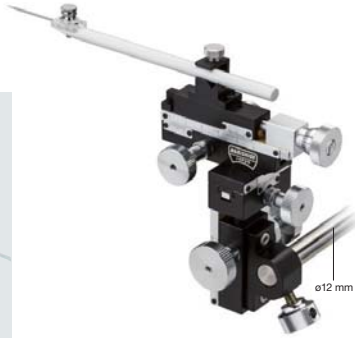
A very popular model among manual micromanipulators

Long cherished by many pioneering users, the MM-3 manual micromanipulator features a smooth drive and stable controls. The three-dimensional coarse movement enables the electrodes to be placed near the specimen quickly. Then, one-axis fine movement in the same direction as the electrodes makes it possible to approach a specimen with care and caution. Knobs on both sides make this equipment suitable for both left- and right-handed operators.

Accessories included	H-13 Electrode Holder, Clamp Rod, Hex Wrench
Movement range	Coarse X30 mm, Y20 mm, Z35 mm
	Fine X7 mm Full rotation of knob 250 µm Minimum graduation 10 µm
Dimensions/Weight	W105 x D70 x H145 mm, 790 g



MO-10 setting example



M-3333

Micromanipulator

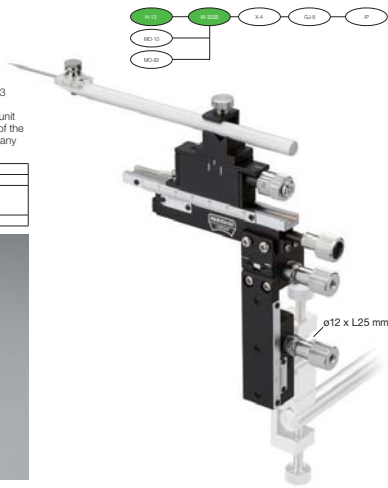
Ultra-thin manipulator body designed for multiple recording

To enable recording from multiple electrodes, the body of the M-3333 micromanipulator is made as thin as possible, with all the knobs positioned in a single direction. Mounting a one-axis fine movement unit on the X-axis allows a more careful approach to the specimen. Use of the X-4 Rotating X-Blocks, sold separately, makes it possible to place many electrodes close together.

Accessories included	H-13 Electrode Holder, Hex Wrench
Movement range	Coarse X40 mm, Y12 mm, Z30 mm
	Fine X7 mm Full rotation of knob 250 µm Minimum graduation 10 µm
Dimensions/Weight	W126 x D43 x H145 mm, 340 g



M-3333 setting example



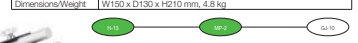
MP-2

Micromanipulator

Numerous functions in addition to three-dimensional movement

The MP-2 micromanipulator combines manipulation with X and Z fine movement with Y-axis manipulation by mounting sub-stage, which allows three-dimensional fine movement. This versatile model has numerous functions such as an easy-to-use tilting stand and pivot/tilt mechanisms.

Accessories included	H-13 Electrode Holder, Hex Wrench
Movement range	Coarse X90 mm, Z50 mm
	Fine X4 mm, Z4 mm Full rotation of knob 250 µm Minimum graduation 10 µm Y40 mm Full rotation of knob 500 µm Minimum graduation 10 µm
Dimensions/Weight	W150 x D130 x H210 mm, 4.8 kg



MO-10

One-axis Oil Hydraulic Micromanipulator

Pencil type manipulator easily combined with three-dimensional manual manipulator

The MO-10 pencil type oil hydraulic micromanipulator is designed for use with a three-dimensional manipulator. The drum type control unit is employed for space saving as well as for precise operation.

Accessory included	Dedicated Electrode Holder
Movement range	Fine 10 mm Full rotation of knob 500 µm Minimum graduation 2 µm
	Control unit W70 x D115 x H100 mm, 1.15 kg
Dimensions/Weight	Drive unit W30 x D20 x H125 mm, 50 g
Hydraulic tube length	1.5 m

* When the electrode is not long enough to reach the sample, use the MO-8HL Long Holder (sold separately).



MO-8HL

Long Holder

Extension electrode holder for MO-10

By substituting the MO-8HL long holder for the electrode holder section of the MO-8, MO-10 and MO-82, this model can elongate the total length to 170 mm. This is an effective solution when the electrode is not long enough to reach the sample.

Dimensions/Weight	W31.5 x D10 x H75 mm, 50 g
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* Two types of holders are available; one holder is used for both ø1mm and 1.5mm electrodes, and the other holder is used exclusively for 2mm electrode.



MX-2

Micromanipulator

Solid and stable manual manipulator

The MX-2 model is a manual manipulator for patch clamping. Its unique structure prevents vibrations in operation propagating towards the tip of the electrodes, and obviates concerns about drift caused by changes of temperature. The angle adjustment with tilting stand and rotating mechanism facilitate the exchange of electrodes. Furthermore, the stand has a magnetic base for installation on an iron plate.

Accessories included	H-13 Electrode Holder, Spanner, Hex Wrench, Tension Adjustment Pin	
Movement range	Coarse	X35 mm, Y30 mm
	Fine	X4 mm, Y4 mm Full rotation of knob: 100 µm Minimum graduation 1 µm
	Z-axis coaxial knob	Coarse: fine movement range 24 mm Full rotation of coarse knob: 15 mm Full rotation of fine knob: 200 µm
Dimensions/Weight	W 210 x D 180 x H 265 mm, 8.7 kg	



MX-4

Micromanipulator

For Installation on the Stage Side of a Microscope

The MX-4 micromanipulator compact model is a space saving version with conventional structure which absorbs vibrations. The tilting stand has a magnetic base for easy installation, and allows the whole body to be set at different angles, which makes it easy to approach the electrodes. A rotation mechanism is also included to facilitate attachment/detachment of microelectrodes.

Accessories included	H-13 Electrode Holder, Spanner, Hex Wrench, Tension Adjustment Pin	
Movement range	Coarse	X25 mm, Y23 mm
	Fine	X3 mm, Y3 mm Full rotation of knob: 100 µm Minimum graduation 1 µm
	Z-axis coaxial knob	Coarse: fine movement range 26 mm Full rotation of coarse knob: 15 mm Full rotation of fine knob: 200 µm
Dimensions/Weight	W143 x D106 x H265 mm, 2.85 kg	

